Hudsonotes

Column of Mechanical Miscellany
by George Schmidt
Mishicot, Wisc.

Adequate Amperes

BATTERY PROBLEMS with a collector car usually include the gradual deterioration which occurs during long periods of disuse while the car is not being driven regularly. All storage batteries spontaneously lose some of their charge during extended storage; however, the rate of loss for a 6-volt unit is normally less than half of that for a 12-volt one of equivalent size and quality, due to the smaller total voltage and the larger ampere capacity per cell.

It is essential that battery terminals and top (including connector bars between cells, if exposed) be kept clean and moisture-free. A thin film of heavy grease (or one of the present-day special coating products) can be used on terminals and clamps to help prevent corrosion. During long storage, a trickle charge (perhaps 1 or 2 amperes) for a day or so every few months is also wise.

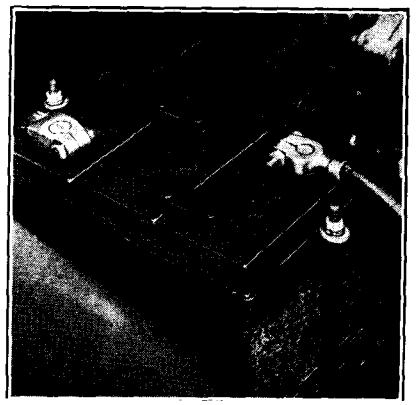
Finding a 6-volt battery of proper size and shape to fit the car's original mountings can be another problem. The standard "Group 1" size, about 6¾ x 8½ inches, and 8 in. high, was used on countless smaller models including the Hudson Jet, and it is still available from numerous sources, often with a choice of ampere ratings and prices.

Hudson stepdowns and many other full-size models, however, used "Group 2" batteries, which were made in a number of shapes and styles to fit various cars; and apparently some of these styles are no longer available. A "2-FS" type, with top about 7¼ x 10½ inches (120 ampere-hour capacity) was original equipment on 1948-49 Hudsons. Near the end of '49 production, Hudson's familiar "third brush" generator and regulator were replaced by a newer system with shunt-type (2-brush) generator and 3-unit regulator; and battery was changed to the "2-L" type, which was slightly taller but not quite as long or wide, although the old size battery holddown frame was retained. New holddown bolts were longer, but some had sufficient extra thread so that either type battery would fit.

Stock ampere-hour rating was reduced to 100, perhaps partly because the new system was designed to give a somewhat more uniform rate of charge at most engine speeds. However, 2-L replacement batteries were also available in a wide range of other ratings up to approximately 130.

Today it may be found that about the only 6-volt battery available in this general size from most suppliers is the plain "2" (no letter designation), measuring about 6½ x 10 x 8 inches. Your columnist has had good results from one of these batteries during the past year or two. It will fit the standard mounts on Hudson stepdowns if the holddown frame is centered over it very carefully and tightened. For a neater fit, rubber weatherstrip about ½ inch thick may be cemented inside each side of frame. Slight re-routing of cables is sometimes also necessary, since the placement of battery terminals (on opposite corners) on the 2-FS was a mirror-image of that on the 2-L, 2, and Group 1.

Another possible alternative may be a rebuilt battery (or a rebuilding of the car's present one). This preserves original size and appearance, but the problem with rebuilt batteries in past years has been highly variable quality and cost. Buy only from a known reliable supplier.



SUFFICIENT AMPERE capacity (which is roughly proportional to a battery's total plate area) is important for several reasons, including reliable engine starting under all conditions, extended battery life, and adequate power to operate all accessories when wanted. The lead/acid type storage battery was originally chosen, and is still retained, for automotive use not because of its poor efficiency or dubious life expectancy, but because of its high tolerance for the very heavy brief discharges which are necessary to start engine. This battery cannot be recharged with equal rapidity, of course, since the excessive formation of gas bubbles would quickly crumble the spongy or porous structure of the plates. The generator's maximum charging current, up to 45 amperes on some Hudson models, thus may possibly damage an undersize battery with limited plate area, but it is not likely to harm a larger one.

The use of 12-volt current to start a 6-volt car in difficult cases is often suggested. Provided the 12 volts are not applied to the 6-volt lights, radio, etc., this works fairly well, since most 6-volt starting motors were sufficiently overdesigned to accept the double voltage for short intervals without harm (in contrast to most modern 12-volt starters, which do not take kindly to an equivalent dose of 24-volt current). Special 6-12 volt batteries and switches have in fact been offered for quicker starting (see article by Louis Backus in December '74 *WTN*).

For most Hudson models in good condition, however, the original 6-volt starting current is adequate provided it remains at nearly the full 6 volts while starting, and does not drop to perhaps 4 volts or less due to poor connections or a battery with insufficient ampere capacity.

A battery's conventional "ampere hour" rating is of course a measure of its slow-discharge capability, not of its fast-discharge or "cranking" capacity. For this reason, some manufacturers in recent years, as plate design and metal have been improved for starting, prefer to give a "cranking capacity" figure instead (and sometimes avoid stating the true ampere rating). While the fast-discharge improvements are welcome, they are not exactly a substitute for adequate total ampere capacity; and for a fully-equipped Hudson stepdown, for example, this writer suggests a battery ampere-hour rating of certainly no less than the 100 specified by factory, particularly if car is driven frequently, with a share of night and adverse-weather use. It should be noted that this rating is the wattage equivalent of only 50 ampere-hours in a modern 12-volt system.

When a battery is discharged, both the lead-metal negative plates and the lead-peroxide (browning) positive plates are changed mostly to a whitish lead sulphate, the sulphate ions for this purpose coming from the sulphuric-acid electrolyte until almost no acid remains and practically plain water is left in its place. A battery should not be stored in discharged condition, particularly in winter, since this water will readily freeze, cracking the case and other parts. This is unlikely to happen with a charged battery, as the sulphuric acid (which reappears upon charging) is an effective antifreeze.

The battery should be solidly mounted on car. Battery support on Hudson stepdowns is usually held to car frame by three large sheetmetal type screws. If any of these fail, leaving an enlarged hole in frame, a longer screw of the same size (a rear-fender bolt, along with its clip), or a plain bolt and nut, can be used. Since nut will be difficult to reach inside frame, use one which is set into small steel plate (perhaps from a spare radiator bracket or similar part) if possible. Also, before tightening holddown bolts, be sure they are properly hooked both in battery tray and in battery support frame.

THE MID-1950'S MAY be remembered as a time of far-out battery advertising claims by a few companies, not all of them entirely honest, for allegedly new, revolutionary, super-power, "lifetime," etc., etc. batteries, most of which differed little from conventional lead/acid types except for the use of a thickened acid solution in some instances (containing silica), and a much-inflated price tag along with a worthless guarantee. Eventually one old-line manufacturer (perhaps National, the supplier of many Hudson original-equipment batteries) chose to lampoon the situation in a trade-magazine ad as follows:

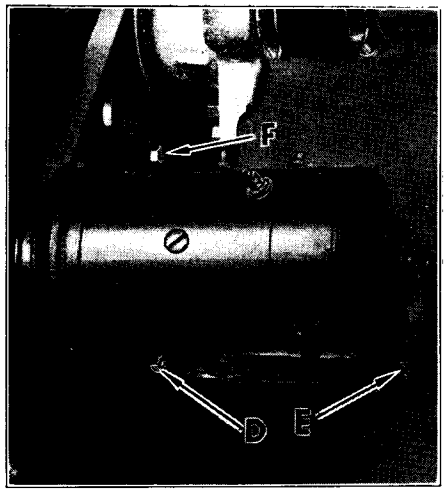
"Another Amazing Battery Development! The 'Do-Nut' Battery . . . the all-around battery; the battery with the hole. Cranks better because the amperes go around and around, eliminates end cell failure because there are no end cells; and the center hole makes a convenient storage place for sandwiches."

No doubt some of the wild advertising had been partly inspired by press reports of a quite legitimate new battery development in Europe a few years earlier. There a zinc/cadmium (alkaline) type battery had been refined and placed in production, and was enjoying a degree of success for industrial, automotive, and other uses. This zinc/cadmium battery provided adequate starting current, added safety, and much longer life than a typical lead/acid unit, but at a sizable cost premium. During the '50's it was believed that zinc/cadmium batteries might also eventually come into widespread use on U.S. cars, but for some reason little has been heard about this in recent years.

POWER CONSUMED by electrical devices on a car is seldom enough to affect fuel mileage noticeably, but it is not free. When no current is needed, the generator spins quite effortlessly on its bearings; but when full charging output is demanded, there is a severe magnetic drag against rotation which must be overcome by engine horsepower. A portion of the charging current is usually wasted in electrolyzing battery water into hydrogen and oxygen bubbles (an explosive mixture), particularly if charge rate is too rapid or battery is already near its full charge. Excessive disappearance of battery water is thus a sign of overcharging; and if ventilation is lacking, there is also an added explosion hazard, since the wasted charging energy may reappear with a forcible bang if gases are touched off by a stray spark.

Hudson generators and regulators are rarely damaged by a slight rate of overcharge; however, if generator brushes fail before they are worn out, owing to wire leads separating from the carbon, this may be a sign of overload. When replacing them, check for any brush springs which have lost much of their tension; these may also be a sign of overheating or overload, and must be replaced. After reinstalling generator on car, it is wise to check for correct charging rate. This will be found listed in most older repair manuals such as MOTOR's, along with other details of generator (and regulator) servicing. If the voltage regulator on an old car does not work properly, check first of all to be sure that all of its connections (including ground to car body, at one mounting screw) are tight and corrosion-free.

Hudson voltage regulators for many years were by Auto-Lite, and of entirely conventional design except for the distinctive extra fourth terminal and pair of contacts, used 1936 and up to operate the "Teleflash" warning light on dash. Those through '49 were 2-unit type, and like the plainer versions on Brand X's, underwent a few running changes which are shown in manuals. Hudson regulators in 1951 were finally changed to eliminate the fourth terminal, with light then being connected to "armature" terminal of regulator instead.



STARTER MOTORS on most Hudsons apparently give very little electrical trouble. This writer cannot speak for the earliest units, which had been brought out by Delco in 1912 and were offered on Hudson the very next year, 1913, thus displacing the 1912 Disco acetylene-gas starter system which, it seems, did not work out very satisfactorily. We would like to hear from owners of Hudsons using any of these earlier systems, and will report their comments in a later column. A few cars of the period (e.g., Winton) had built-in compressed-air starters, and there was also an add-on version from Stewart-Warner (which doubled as a power tire pump). There were even a number of manual rope-pull starters, operating lawn-mower fashion, with handle accessible from driver's seat. The early electrical starting and lighting systems were generally of two types: single-unit, with one dynamo serving as both starter and generator; and two-unit, similar to the arrangement still in use today. Most early Delco systems, however, used a compromise: a single unit which contained separate windings, commutators, etc. for generating and starting.

Later Hudson starters were by Auto-Lite, and those of the 1940's and up, at any rate, seem quite tolerant of hard use, even on 12-volt current. Problems, if any, are usually mechanical: noisy operation, or malfunction of the Bendix starter drive. Michael Lamm, in a *Special-Interest Autos* article a few years ago, referred to the 1940 Hudson's "characteristic ching-a-ling starter sound." This is due partly to mounting of motor against steel rear engine plate, which acts as an effective sounding board. The sound can sometimes be muted slightly by placing a homemade tin-can shim, more or less crescent-shaped, tightly between plate and edge of motor just below timing window.

Some of these motors also tend to loosen occasionally on their mountings. The usual first symptom is increased starter noise. The two retaining studs should have new, heavy-grade lockwashers, along with original heavy-duty nuts or equivalent; or if necessary, a second nut at each end as an added lock. Use a wrench which will permit sufficient tightening torque, and if possible tighten motor end of stud first.

Sometimes loosening occurs instead between the end plate and outer shell of starter motor itself. The end plate is held on these motors by the two long throughbolts, and usually also by two 10-32 flathead screws. Screw heads may be accessible only when motor is off car, but they must be kept tight. Replace if broken or distorted.

Persistent problems with motor vibration, noise, and loosening may be caused partly by an out-of-balance armature, due possibly to past overheating or to a slightly bent motor shaft. The long external shaft used with "inboard" type starter drive on most models is somewhat vulnerable and must be handled carefully, especially when removing or replacing transmission.

Proper lubrication also helps reduce starter noise and wear, and as with generators, the oil used may be somewhat heavier when the unit is old. Plain #50 grade will do, or perhaps oil with ¼ or so of a thickener such as STP added. This may require a small oil can and slight dilution with solvent, however, as the two oil holes provided on most of these motors are tiny. Oiling may be done every year or few thousand miles, but very sparingly (a few drops), since motor innards and starter drive must be kept oil-free. If motor is being dismantled for any reason, all dirt, and copper dust from brush wear, can be cleaned away (do not use solvent on motor windings), and then the bearings lubricated with a good non-runny grease such as Lith-Ease

or Lubriplate. New bearings (bronze bushings) are easily installed, but are seldom needed on these models. If motor end play seems excessive, one or two extra fibre washers may be added on shaft.

STARTER DRIVES on the majority of Hudsons were true "Bendix" drives, shifting into mesh with flywheel entirely by inertial, rather than by foot-pedal or magnetic-solenoid, action. Most were Bendix "Eclipse" barrel type, called "inboard" because they shifted into mesh inward, toward starting motor — not away from it.

It is essential with this type drive that the parts turn very freely on each other, without sticking, at all temperatures. These parts, including the pinion on motor shaft, and the threads which move it into mesh, should not be oiled, as this usually will cause further sticking later. Even a grease such as Lubriplate, which is excellent for magnetically-shifted starter drives, is not best for use here. Any slight leakage of oil or of Hudson clutch fluid is also likely to cause starter drive to stick.

Cleaning with solvents, such as spray-type carburetor cleaner, or lacquer or enamel thinner, will quickly free the parts, but this is often only a temporary correction. Kerosene has less tendency to leave parts exposed to subsequent rusting, and was the solvent recommended by factory. It is satisfactory if fresh and non-gummy. If a further lubricant is needed, graphite is the usual choice. Finely powdered dry graphite works well if it will stay in place (inside barrel, for example). Graphite and kerosene, or one of the non-sticky graphite products sold for locks or speedometer cables, can be used on external parts.

Most of these starter drives are removed from motor by first removing wire lock ring, heavy drive spring, and outer spring anchor ring from end of shaft, and then driving out crosspin. Use penetrating oil on this end of drive assembly if necessary. These drives were not meant to be taken apart for cleaning or repair, but they can be if the snap ring is carefully removed from outboard end of barrel. Rough or rusty parts can often be cleaned up and polished, and despite minor production changes, such as the anti-drift spring inside barrel, parts from many of these drives are interchangeable. The commonest cause of failure is excessive wear of pinion teeth, occasionally with loosening of pinion on barrel. Also inspect both drive spring anchor rings, as these have been known to break. Use a graphite lubricant when reassembling drive.

A TEENAGE ACQUAINTANCE (who drives a '51 Dodge) recently loaned me a stack of *Car Collector* magazines which I had not seen. Along with the usual old-car articles and pictures, these magazines feature several regular columnists including Richard M. Langworth. A year ago, in the November '79 issue, he devoted part of one column to a favorable description of the Hudson-Essex-Terraplane Club, with also (we are happy to note) a good word for the *White Triangle News*. Annual dues and magazine page size have been changed since column was written, but he suggests that ours is a worthwhile club to join, "even if you do not own the make."

"Car of the month" (with color centerspread) in the December '79 *Car Collector* was a '31 Studebaker President, and this supplies an interesting footnote to the description of Hudson's accessory Swinging Stop Light (available 1936-37 and no doubt earlier) in the May-June '80 *WTN*. Apparently this "wig-wag" light, or a pair of them, had also been an option on the '31 Stude and probably other cars of the time, even including one Hispano-Suiza model, but is exceedingly rare today.

THE TIME IS COME once again to wish everyone in the club a cool Yule (or a swell Noel), along with a happy 1981 during which we will be able to drive and enjoy (and feed) our Hudsons in the manner to which they . . . and we . . . are accustomed. Best of luck!
